

What is claimed is:

1. A method of preparing a tool path to simultaneously conduct a roughing and a finishing operations by moving at least one of a workpiece to be rotated around a predetermined axis and tools including a roughing tool and a finishing tool offset-arranged in the axial direction of the predetermined axis, the method comprising:

calculating a path of the roughing tool based on a path of the finishing tool by shifting the path of the finishing tool by a finishing allowance in the direction perpendicular to the predetermined axis; and

correcting the calculated path of the roughing tool so as to form a predetermined gap between the workpiece and the roughing tool in the axial direction of the predetermined axis.

2. The method according to claim 1, wherein the path of the roughing tool is corrected so that the moving speed of the roughing tool in the direction perpendicular to the predetermined axis is a predetermined value.

3. The method according to claim 1, wherein the path of the roughing tool is corrected so that the roughing tool moves at (a predetermined acceleration from a position, at which the gap between) the workpiece and the roughing tool in the axis direction of the predetermined axis becomes a predetermined value, in the direction

perpendicular to the predetermined axis.

4. A method of machining a workpiece to be rotated around a predetermined axis, comprising:

arranging tools including a roughing tool and a finishing tool offset in the axial direction of the predetermined axis;

calculating a path of the roughing tool based on a path of the finishing tool by shifting the path of the finishing tool by a finishing allowance in the direction perpendicular to the predetermined axis;

correcting the calculated path of the roughing tool so as to form a predetermined gap between the workpiece and the roughing tool in the axial direction of the predetermined axis; and

moving at least one of the workpiece and the tools, thereby simultaneously conducting a roughing and a finishing operations.

5. The method according to claim 4, wherein the path of the roughing tool is corrected so that the moving speed of the roughing tool in the direction perpendicular to the predetermined axis is a predetermined value.

6. The method according to claim 4, wherein the path of the roughing tool is corrected so that the roughing tool moves at a predetermined acceleration from a position, at which the gap between the workpiece and the roughing tool in the axis direction of the

predetermined axis becomes a predetermined value, in the direction perpendicular to the predetermined axis.

7. A tool path preparing method comprising:

- reading initial positions of a roughing tool and a finishing tool;
- initializing the number of cumulative rotations of a workpiece to be rotated around a predetermined axis;
- reading a position data calculation program;
- settling a movement position of the finishing tool at a predetermined number of cumulative rotations of the workpiece;
- calculating a movement position of the roughing tool at the predetermined number of cumulative rotations of the workpiece;
- correcting the calculated movement position of the roughing tool in a direction perpendicular to and away from the predetermined axis when a gap between the roughing tool and the workpiece in the axial direction of the predetermined axis is not larger than a predetermined value; and
- storing the movement position of the roughing tool and the finishing tool in a position data table memory.